

MECA/SEMCO Manufactured Homes 2015 Pilot Results

Tuesday, July 19, 2016
Lansing, MI



Who is WECC?

- Founded in 1980
- Mission-based nonprofit
- Innovative, nationally-recognized industry leader
 - Energy-saving programs and pilots
 - Energy efficiency financing
 - Technical training and certifications
 - Marketing, planning, and support services

WECC Making A Difference

Since 2001, **WECC** has helped save:



\$978 million
in energy costs

7.3 million
MWh of electricity

23.8 million
Dth of natural gas

6.3 million
metric tons of CO₂

That's equal to:



572,116
homes powered for a year

Why Manufactured Homes?

Definition: Single-story, constructed in a factory, wood-frame bolted to steel chassis, and designed to be transported



Why Manufactured Homes?

- Mobile homes comprise 6% of all single-family households in U.S.
- 19 million people (7.5%) of the U.S. population occupy 9 million mobile homes
- Energy standards have not been updated since 1994—lower than site-built homes

Underserved Market

The manufactured housing market requires a targeted, separate program with low delivery costs to capture energy savings and affect utility bill non-payment

- Smaller than site-built homes, MH show different cost effectiveness for common HVAC, water heating, plug-load, and lighting measures
- Residents of MH spend twice as much on energy per square foot of living space as site-built homes
- Owners are typically low-to-moderate income, increasing first-cost barriers and impact on utility bill payment practices
- Reduced WAP funding is creating opportunity for utility programs

Michigan Market Analysis

	Total MH Homes	% MH Home	Avg Age	Median MH Home Value	Average owner income	Average renter income
Eastern Upper and Northern Lower Michigan	39,910	10%	1978	\$43,450	\$42,983	\$23,586
Michiana Counties	13,088	8%	1972	\$33,700	\$50,010	\$26,456
Southeast Lower Michigan	98,274	4%	1982	\$28,300	\$52,569	\$32,829
Southwest Lower Michigan	87,713	7%	1979	\$39,700	\$48,059	\$26,679
Upper Central and Western Michigan	10,163	7%	1968	\$37,950	\$48,328	\$22,566
Statewide	249,148	5%	1980	\$35,900	\$49,729	\$29,090

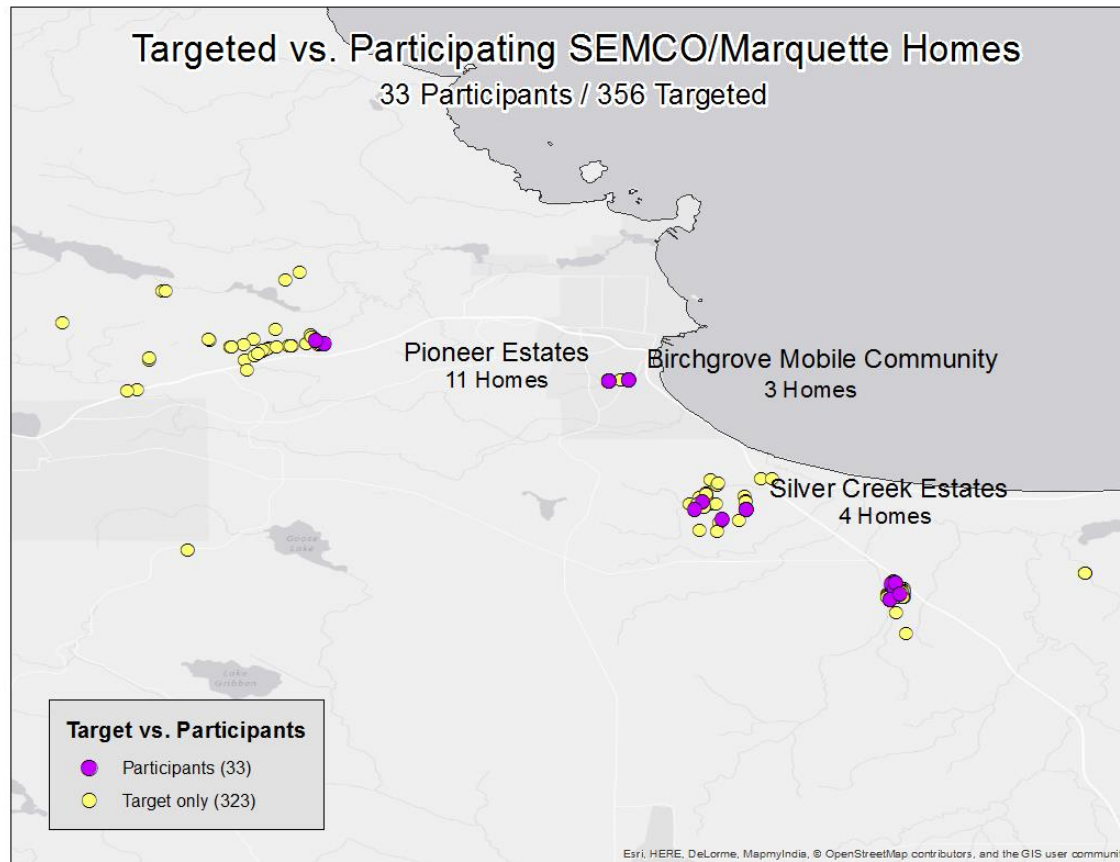
Source: US Census Bureau American Community Survey State and Local Areas

Manufactured Homes Pilot

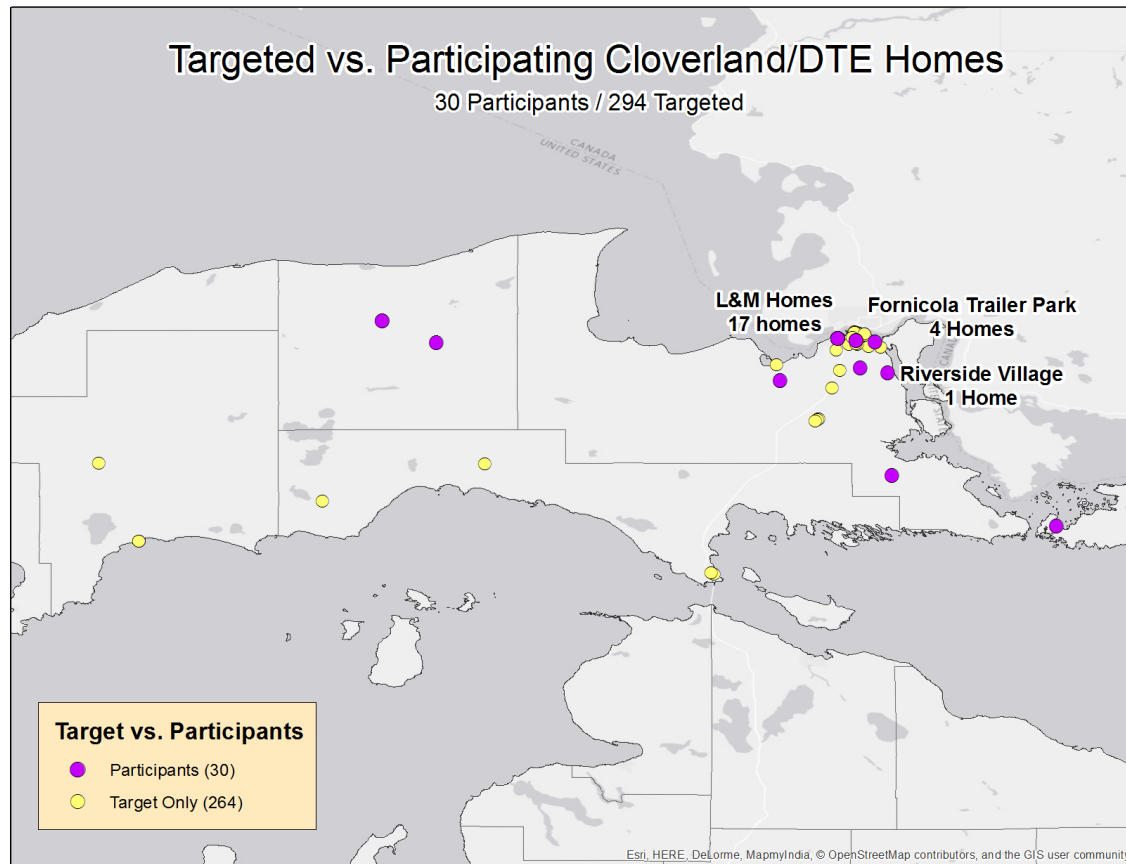
- Co-sponsored by MECA and SEMCO
- Collect customer, equipment, and housing stock data for future program design
- Delivered in 2015, full roll-out in 2016
- Energy assessment and direct install with duct sealing
- Engage an underserved market
- Train contractors and provide QA/QC



Marquette/SEMCO



Cloverland/DTE



Marketing and Outreach



SEMCO ENERGY Gas Company and Energy Optimization are joining together to offer a special Manufactured Homes Program at no cost to eligible customers

A professional, trained contractor will come to your home to:

- Test and seal your home's heating and cooling system ductwork
- Install up to 10 Compact Fluorescent Light Bulbs
- Install water- and energy-saving items

Plus, provide valuable information on how your home operates along with energy-saving ideas. All work completed in a high quality manner in one day or less, at no cost to you.

Act now! This offer is available for a limited time.

Contact the Energy Optimization program to sign up for this special program. Call 877.296.4319 today.



Energy Optimization is a program funded through the

EFFICIENCY. SAVINGS. COMFORT.

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Contact the **Energy Optimization** program to sign up for this special program:

Call: 877.296.4319 Email: info@michigan-energy.org

OR provide contact information here:

Name: _____

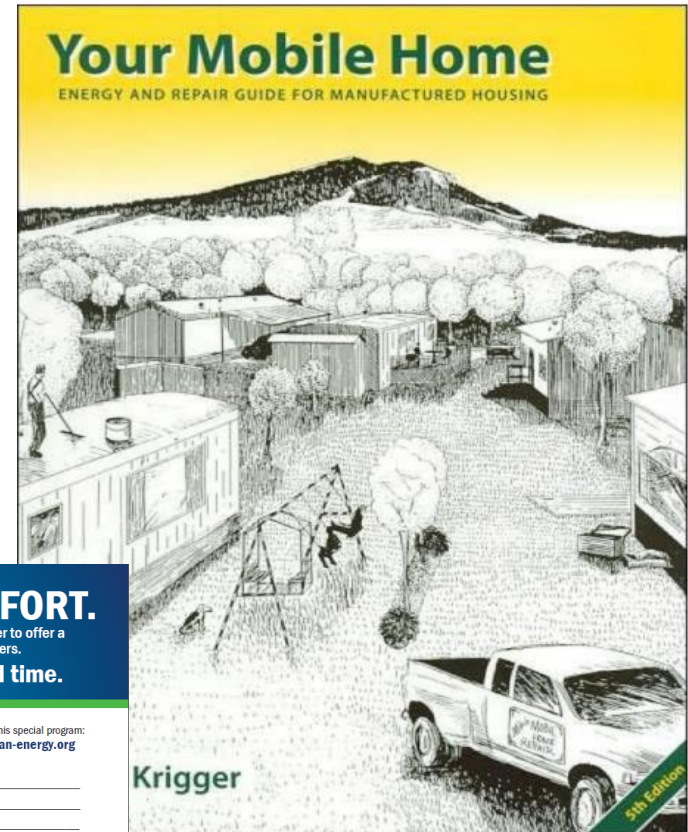
Address: _____

City: _____

State: _____ Zip code: _____

Daytime Phone: _____

Email: _____



Direct Install Measures

Measure	Quantity
13W CFL (60W equiv.)	10
Low-flow Showerhead 1.75 GPM	1
Kitchen Aerator 1.5 GPM	1
Bath Aerator 1.5 GPM	1
Pipe Wrap – 6 ft.	1
Duct Sealing	1

Robust In-Field Testing



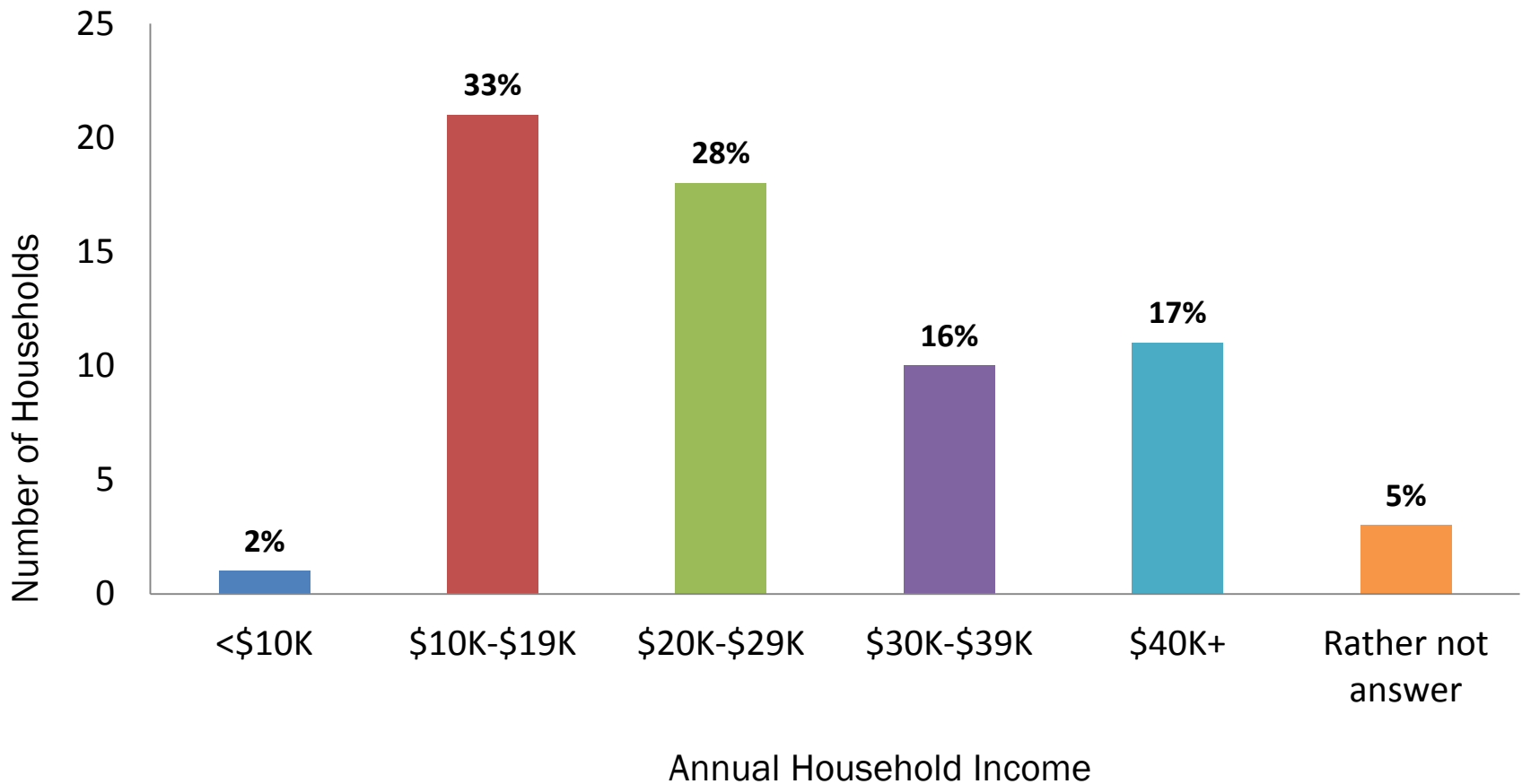
Vent Field Images—Pre-Work



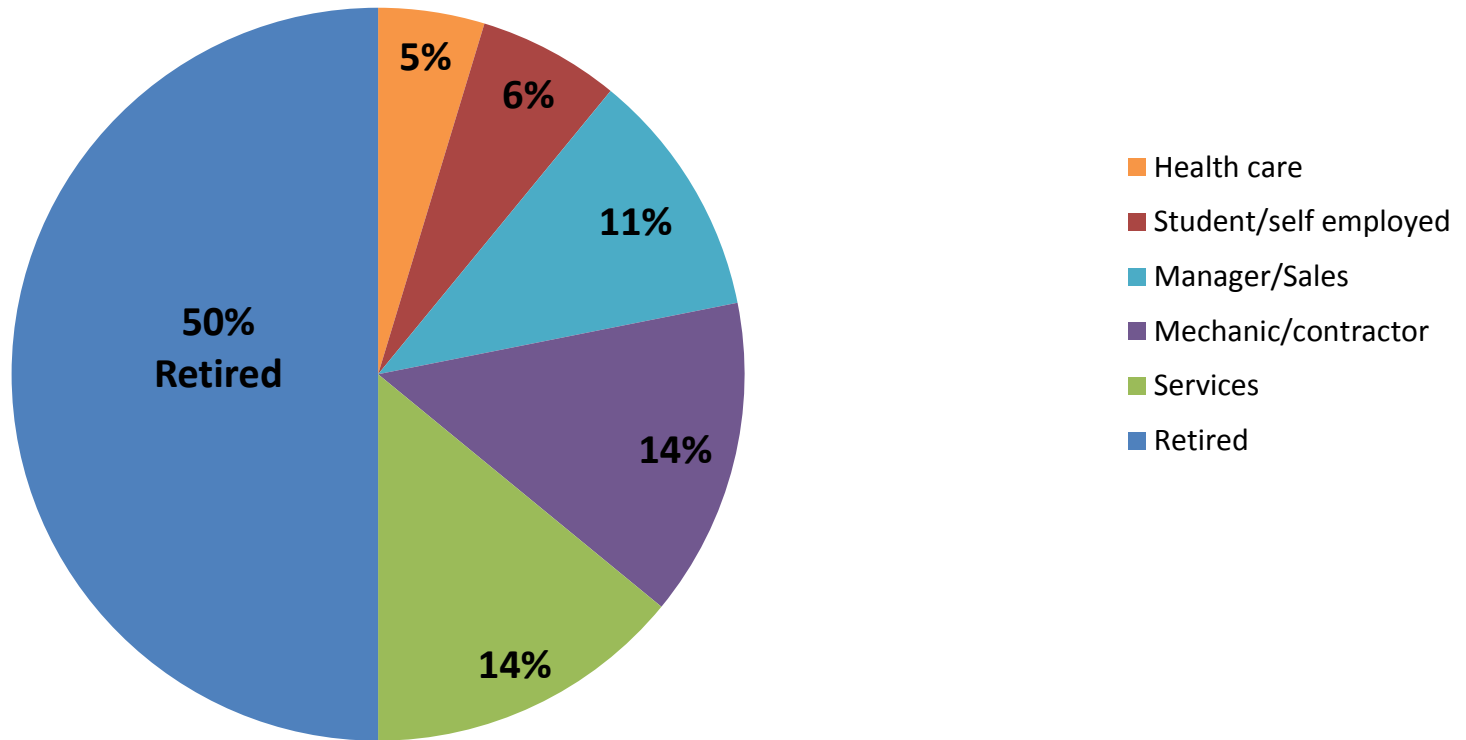
Vent Field Images—Post-Work



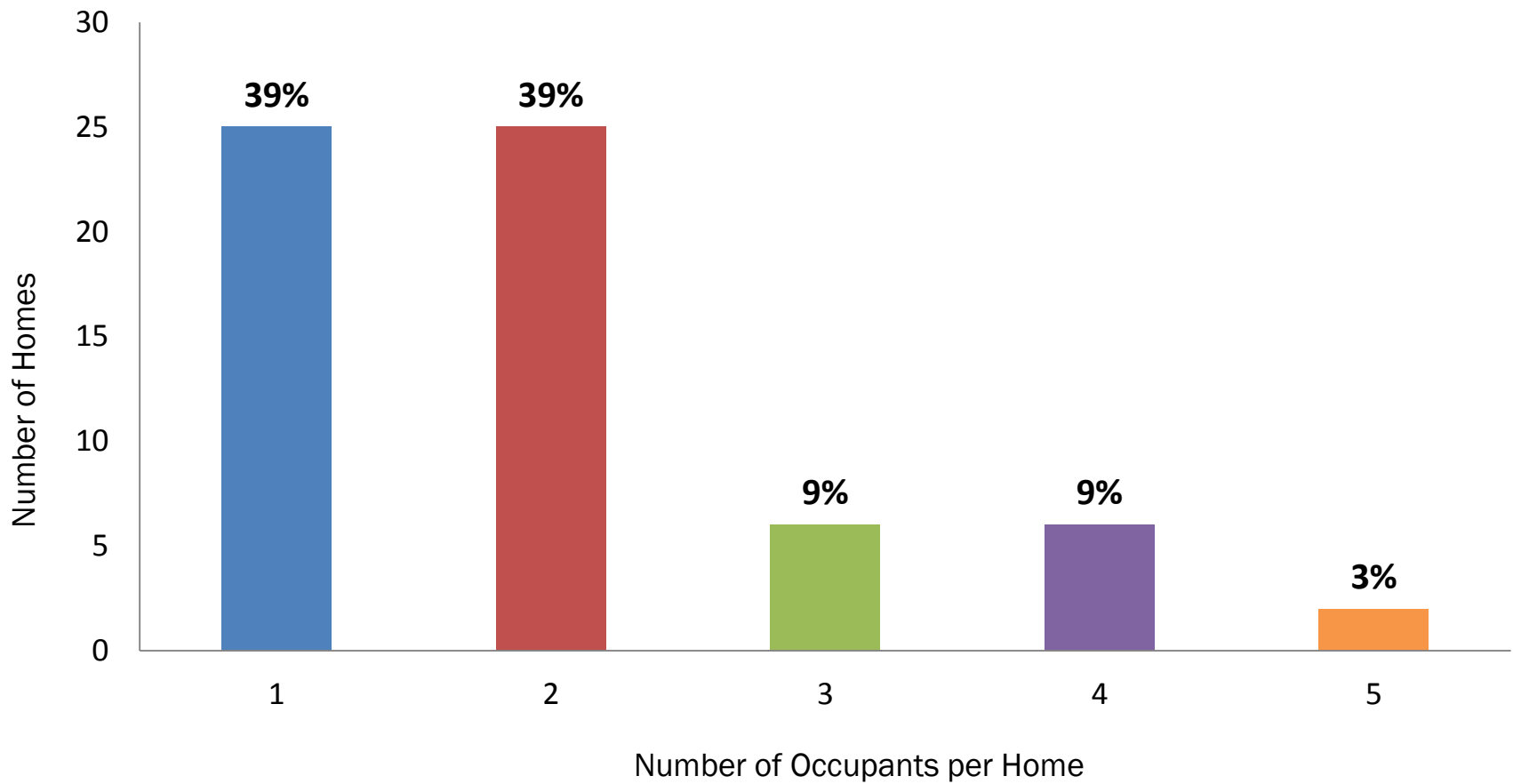
Low Income Customer Base



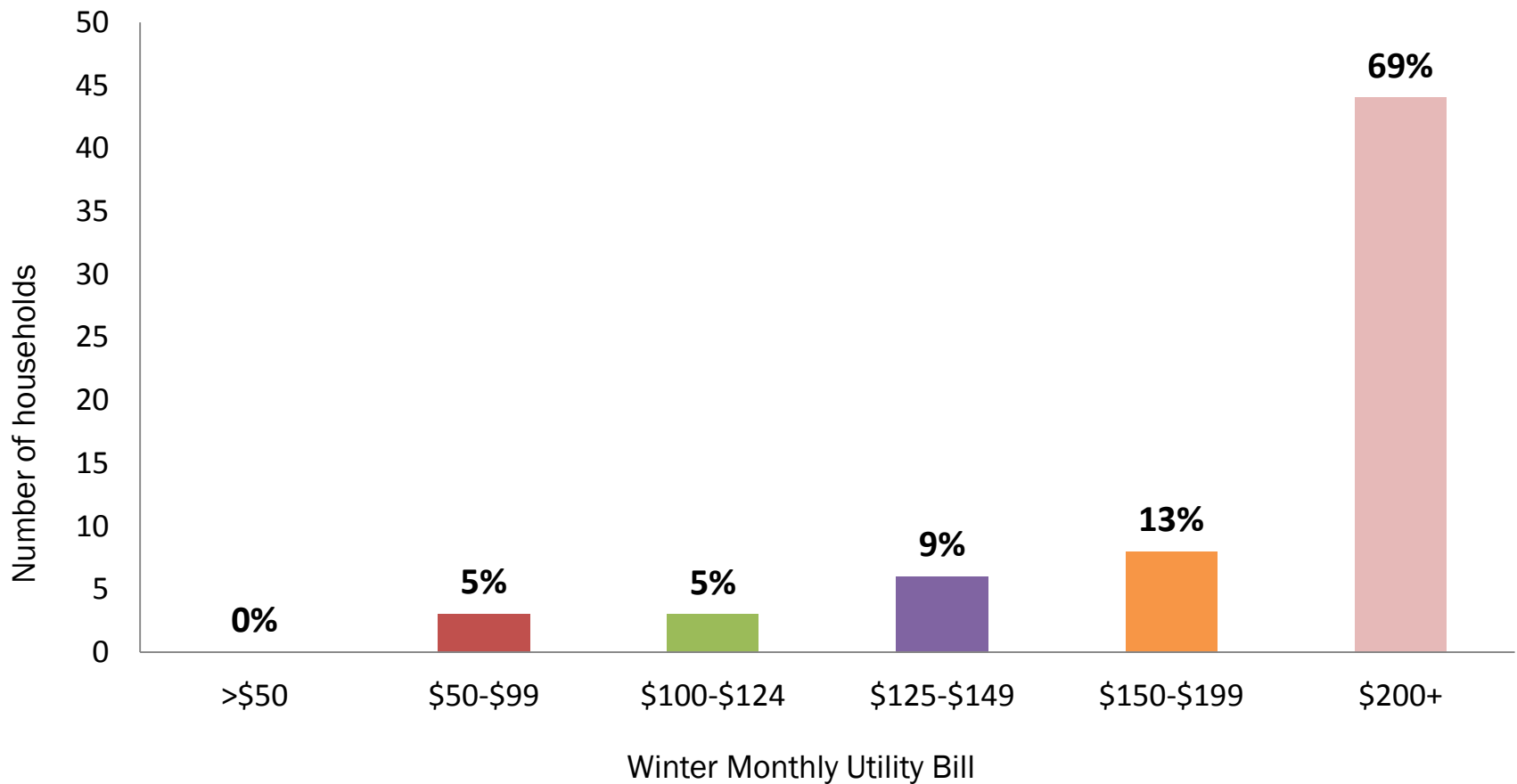
Fixed Income—Retired



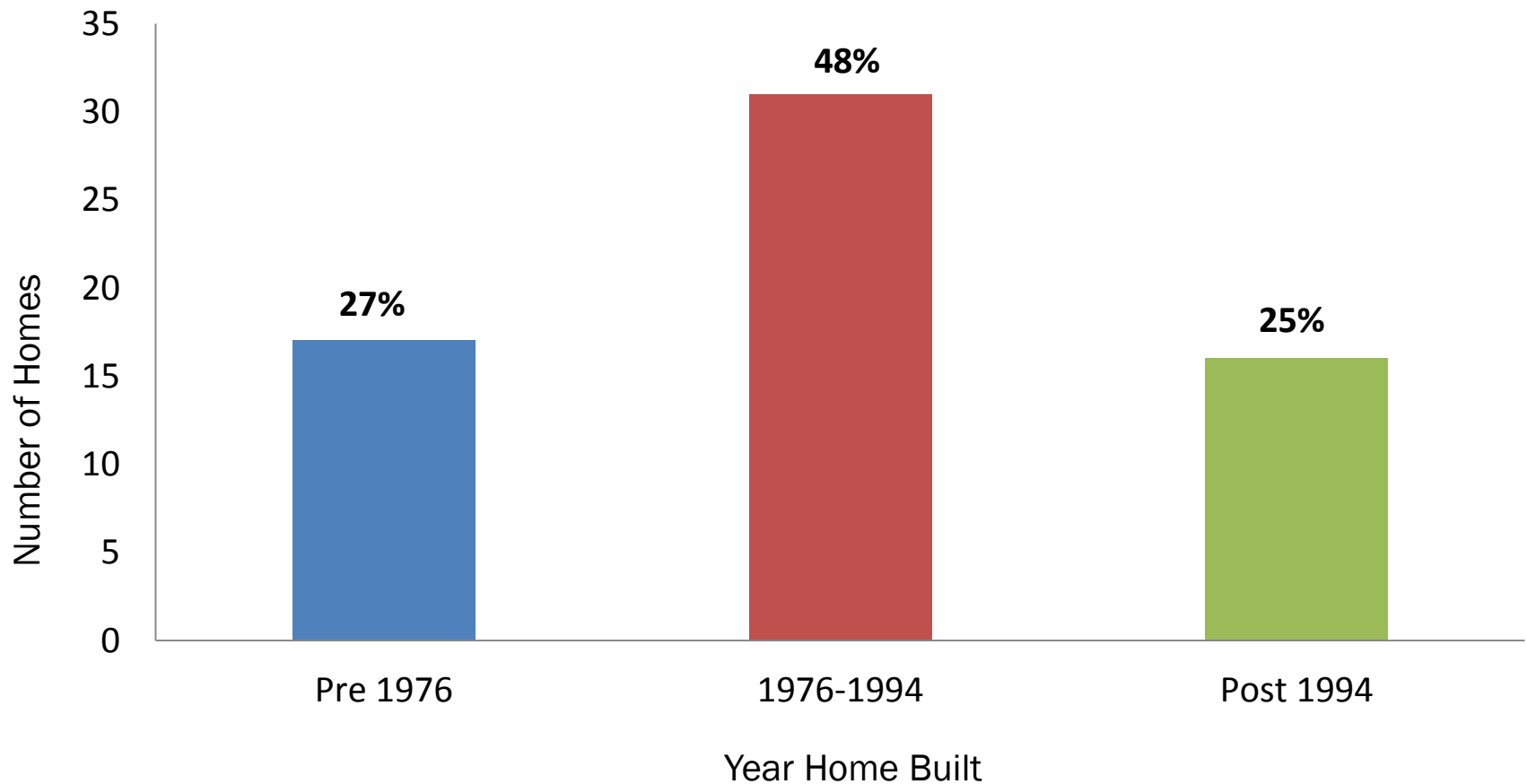
Small Households



High Utility Bill Perception

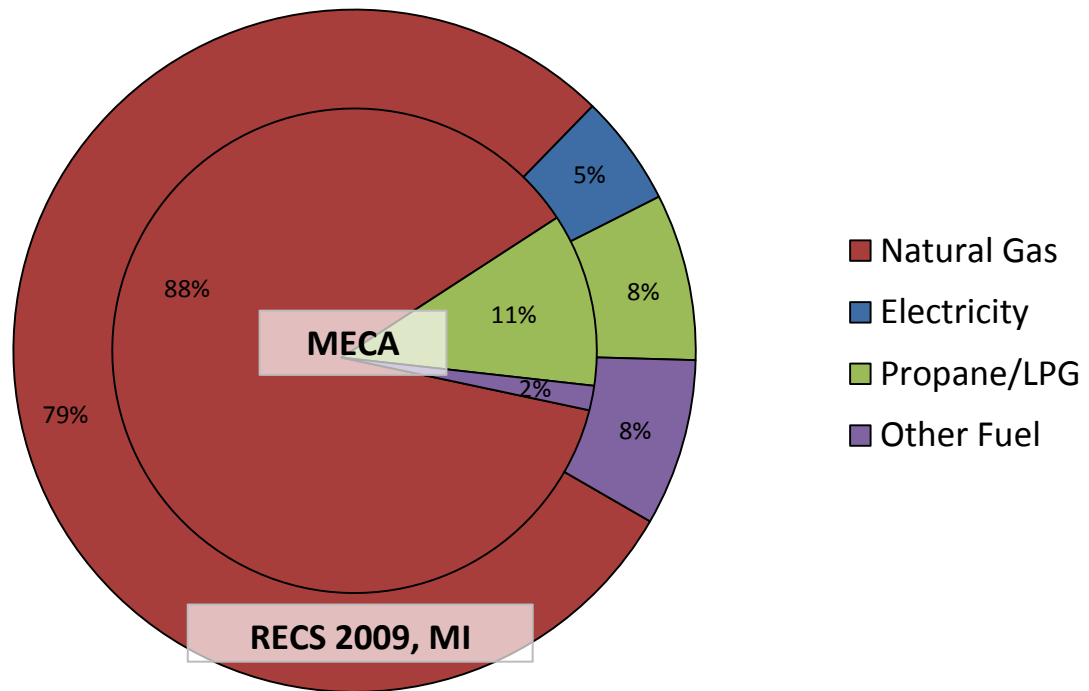


~50% Met Target Age of Home

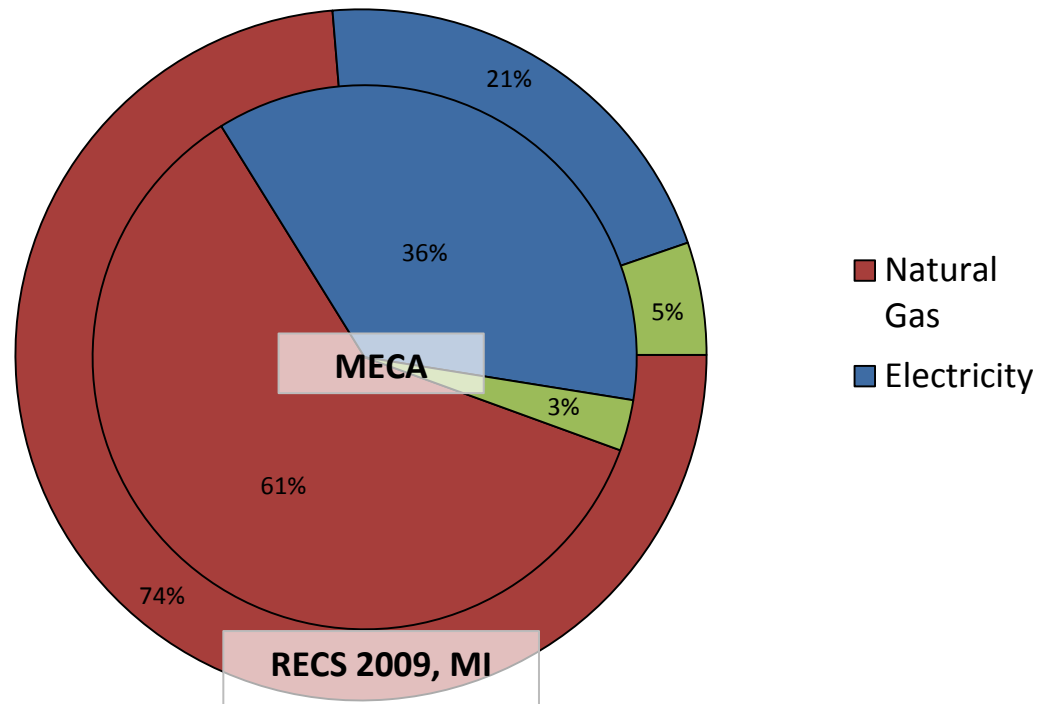


Heating Fuel

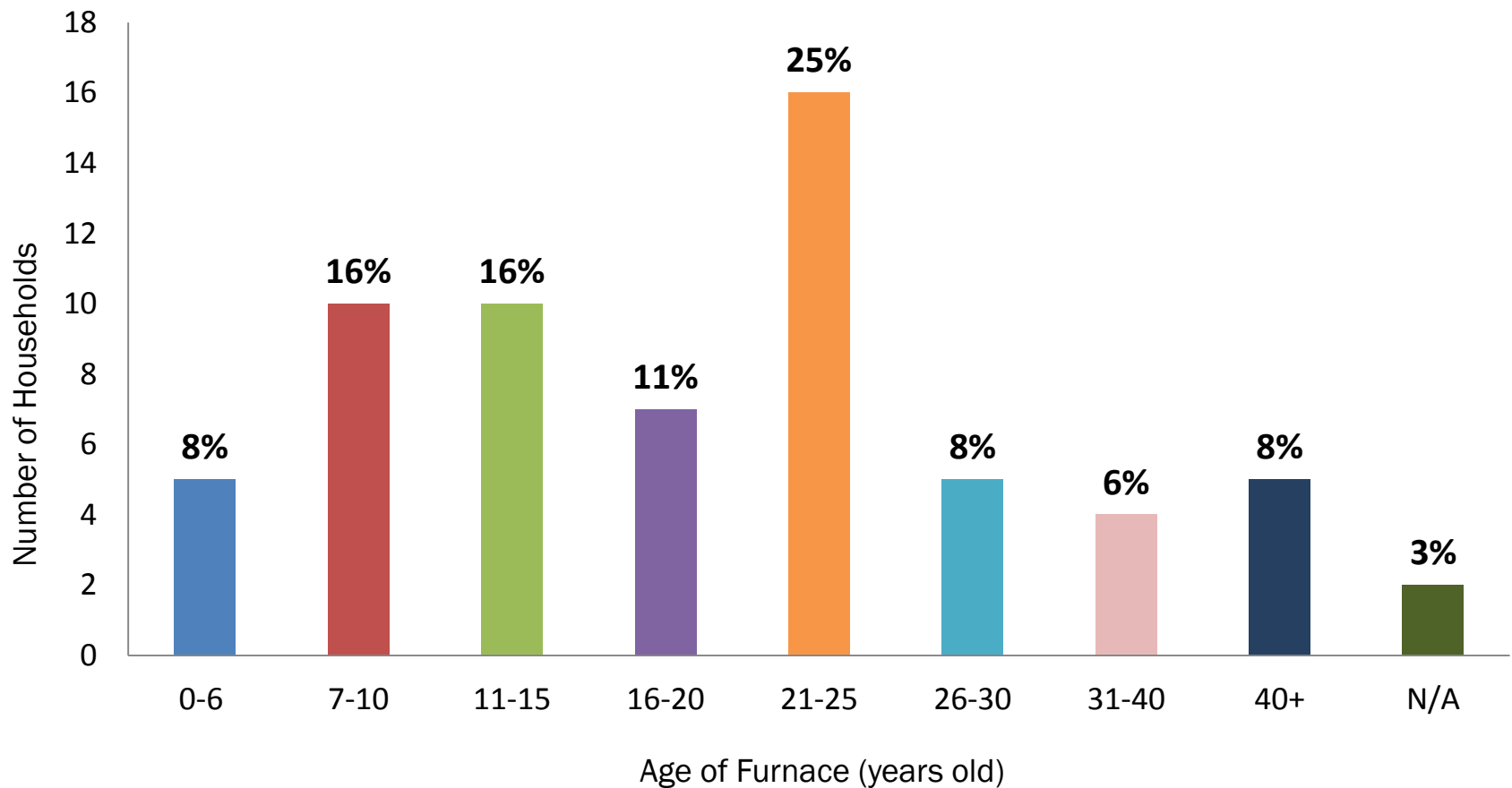
Primary Furnace Heating Fuel



Water Heating

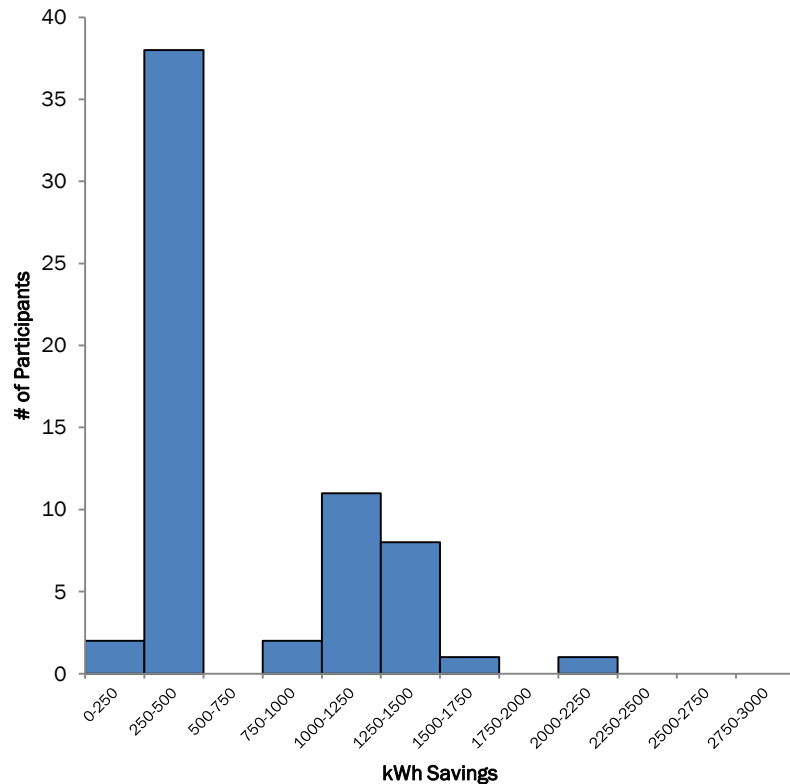


50% of Furnaces Over 20 Years Old

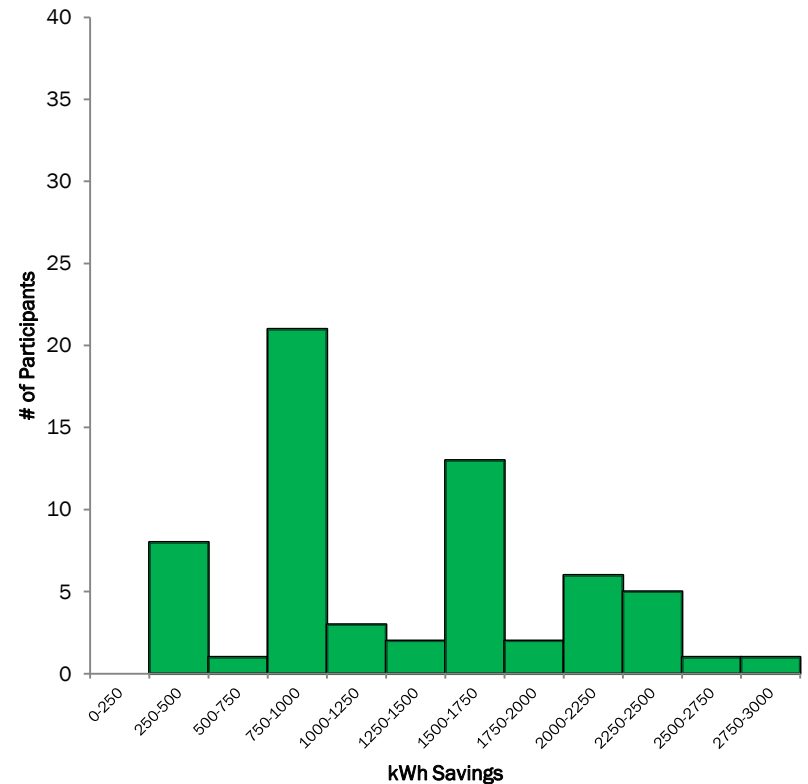


Pilot Participant kWh Savings

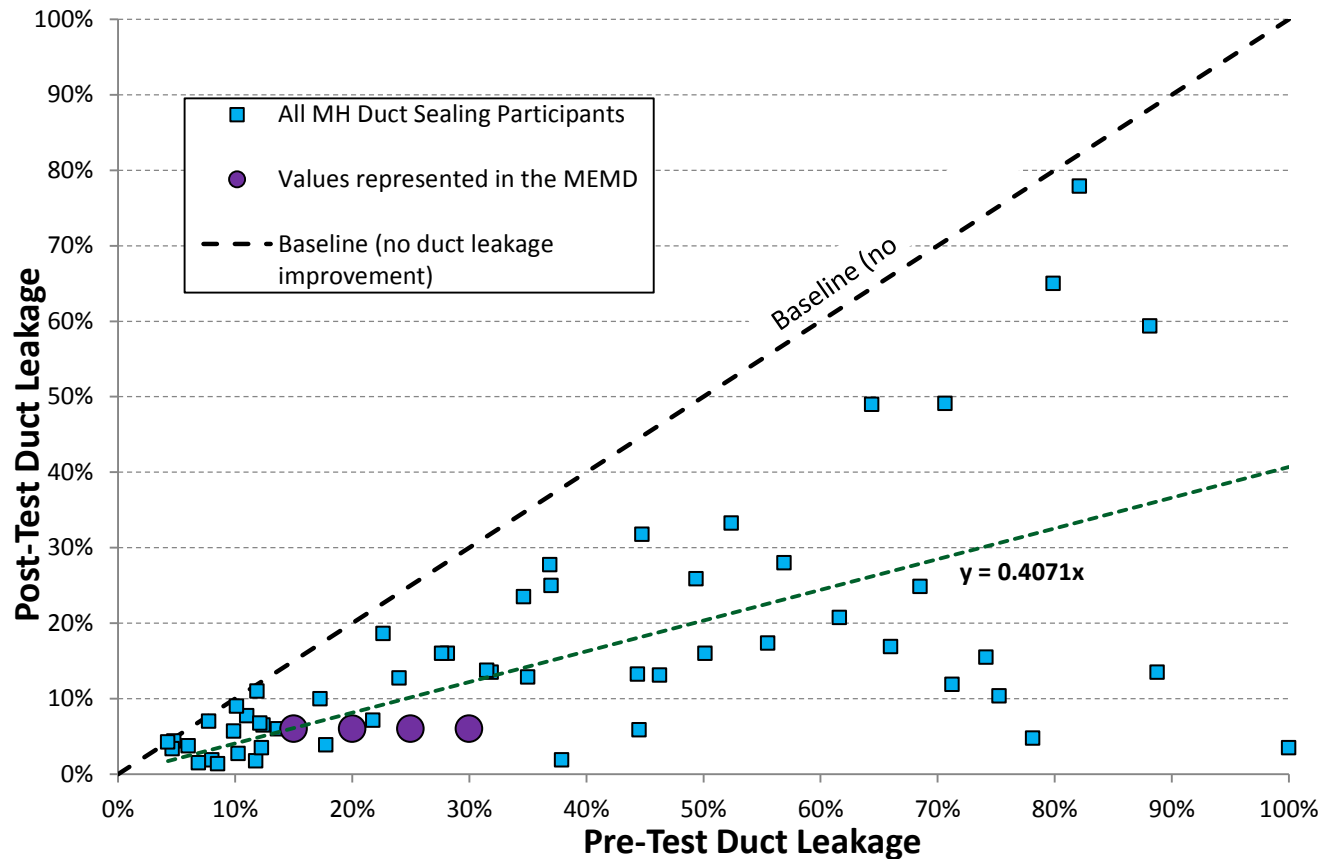
Pilot Participant Savings



Expanded Measure List

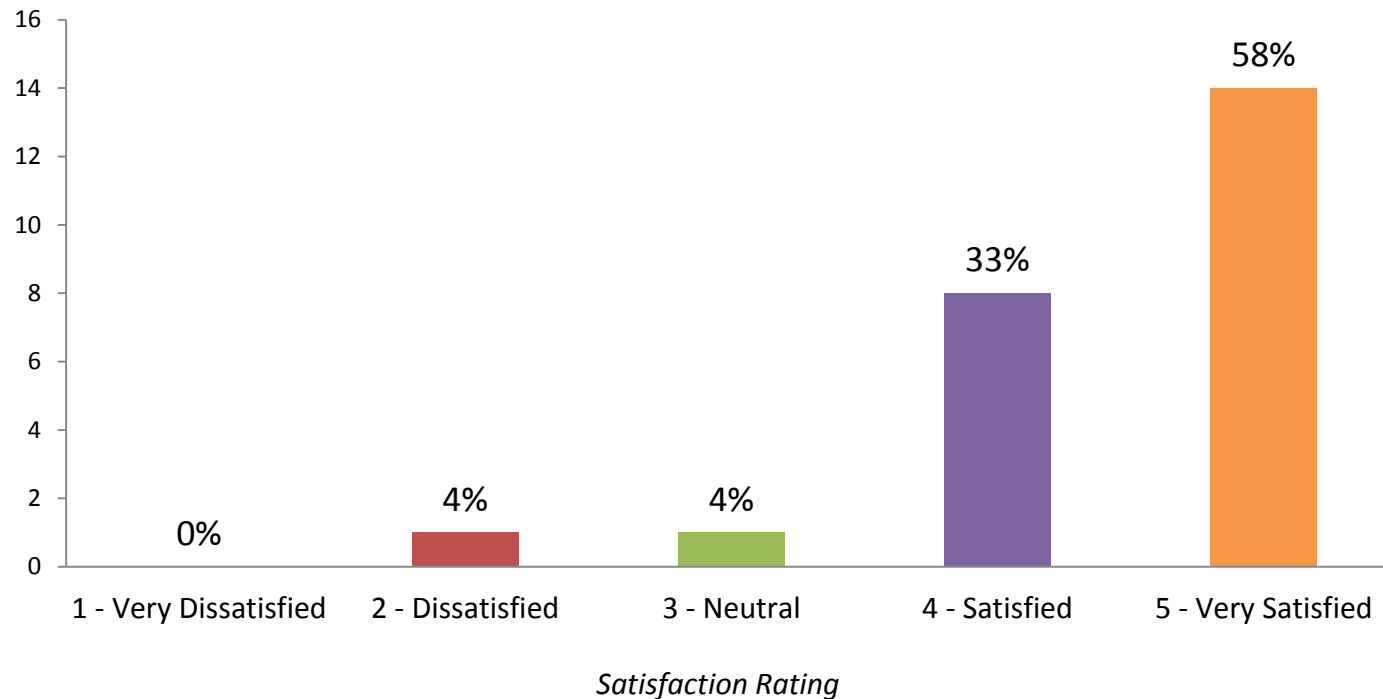


Duct Leakage Analysis (MI Only)



Customer Satisfaction

Overall, how satisfied are you with the EA and EI you recently received?



Customer Feedback

- “My furnace doesn’t run so much, and the heat seems to be more evenly spread out.”
- “I keep the heat set at 68 degrees and the house feels warmer.”
- “Instant relief from the dust and cold.”
- “Much warmer with the heat turned down.”
- “The new showerheads they put in are nice.”
- “Bills went down!”
- “Light bill”

Pilot Results

- 63 participants
 - 11 with central air (half of what we anticipated)
 - 0 with electric heat
 - 5 with no duct sealing
- Air leakage 38 percent, highest Michigan Energy Measures Database (MEMD) 30 percent
- Average 664 annual kWh and 152 therms savings per home

Next Steps

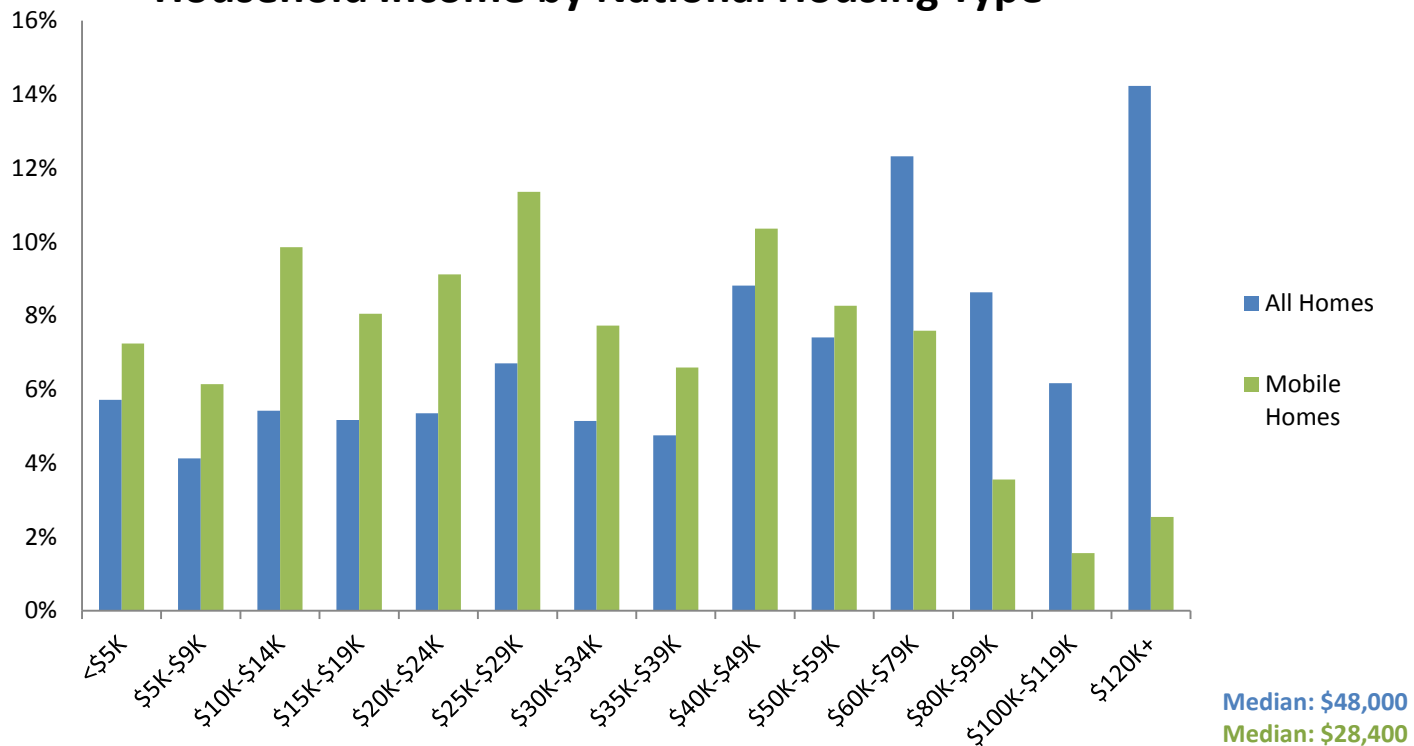
- Billing analysis Q1 2017
- Transition from pilot to program
 - Extending into Great Lakes Energy and Midwest Energy Cooperative territories
 - Adding exterior LED, ECM replacement, and programmable thermostats

Future Considerations

- Community engagement and recruitment
- Contractor training is valuable
- Customer intake/scheduling process
- Homes have multiple bathrooms
- Geography matters
- To increase electric savings
 - Target homes with electric water heaters
 - Include ECM, outdoor LEDs, and programmable thermostats to increase average kWh savings

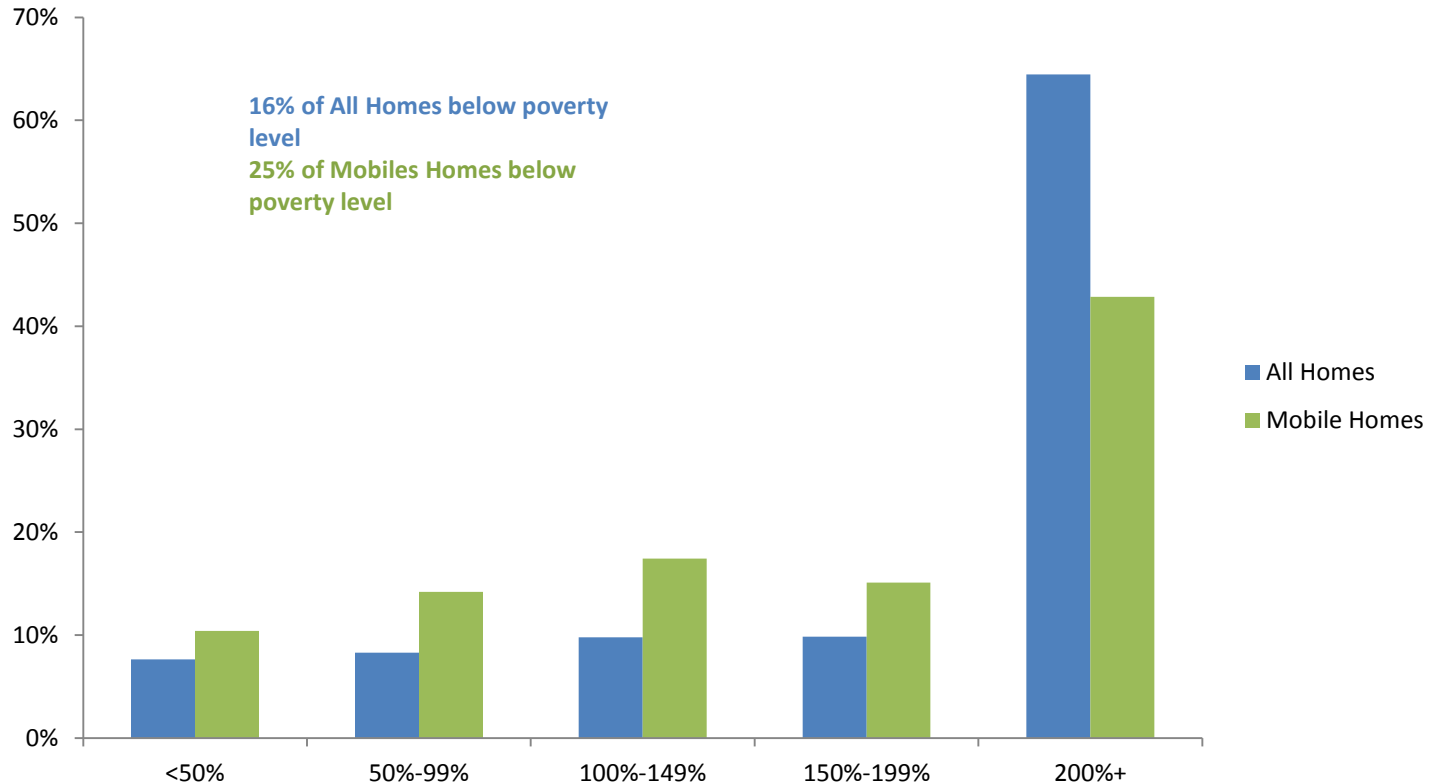
Low Income

Household Income by National Housing Type



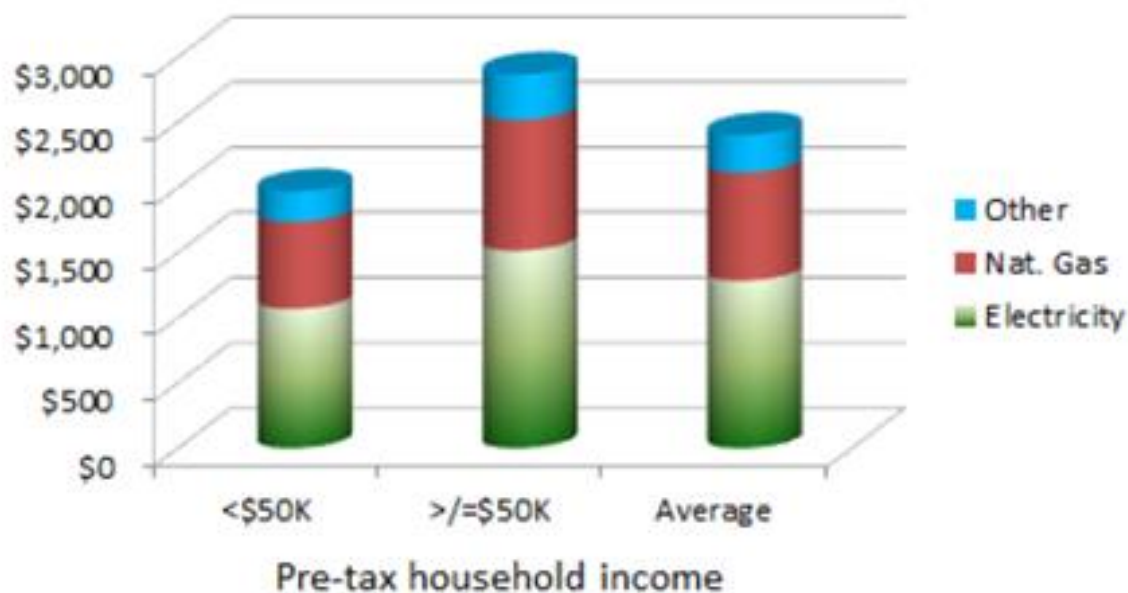
Low Income

National Income as Percent of Poverty Level



Michigan Energy Costs

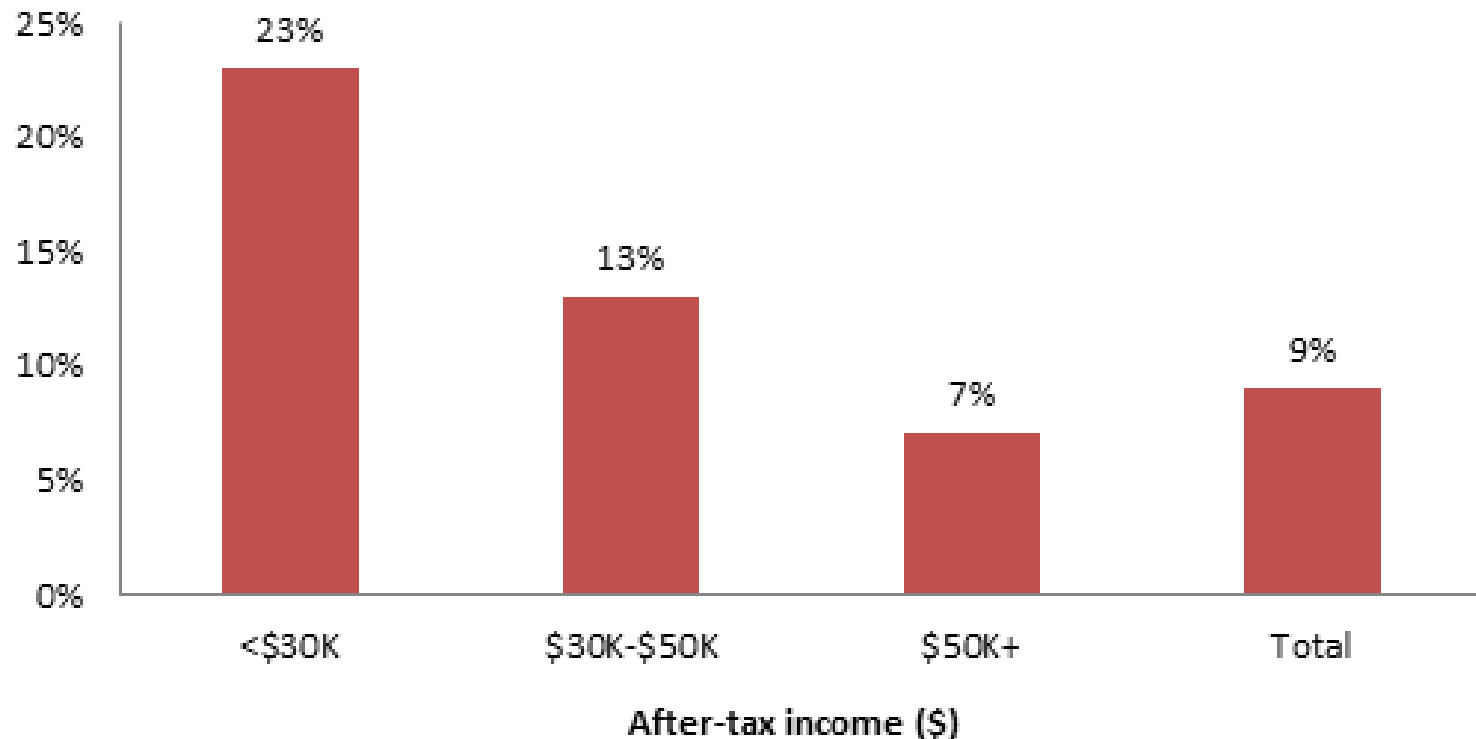
Estimated 2015 Michigan residential energy expenditures by pre-tax household income



Sources: U.S. DOE/EIA; U.S. Bureau of the Census.

Michigan Energy Costs

Michigan household energy costs as percentage of after-tax income

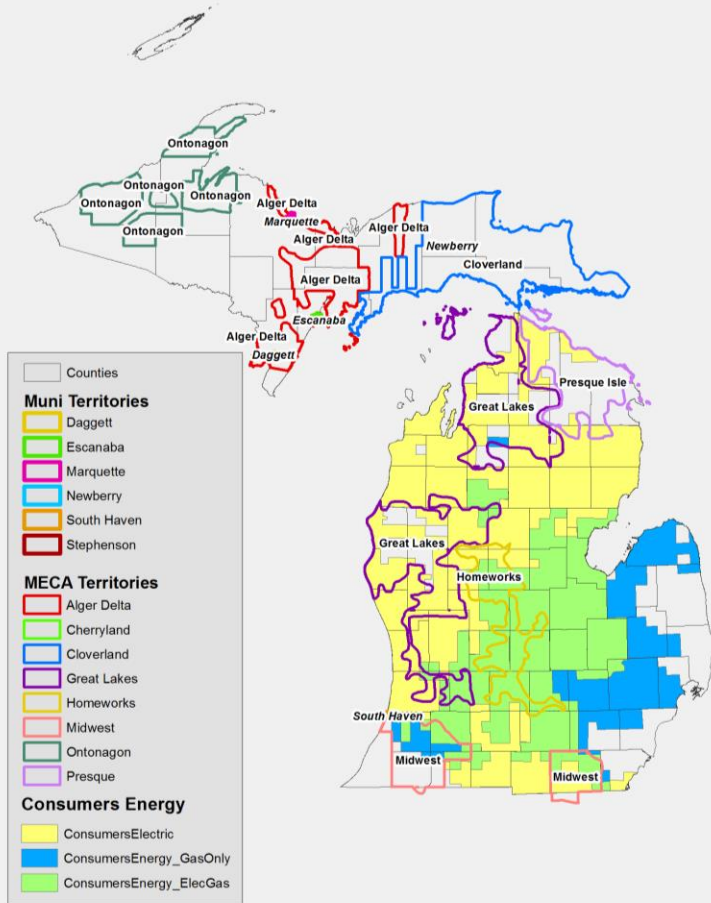


Why Manufactured Homes?

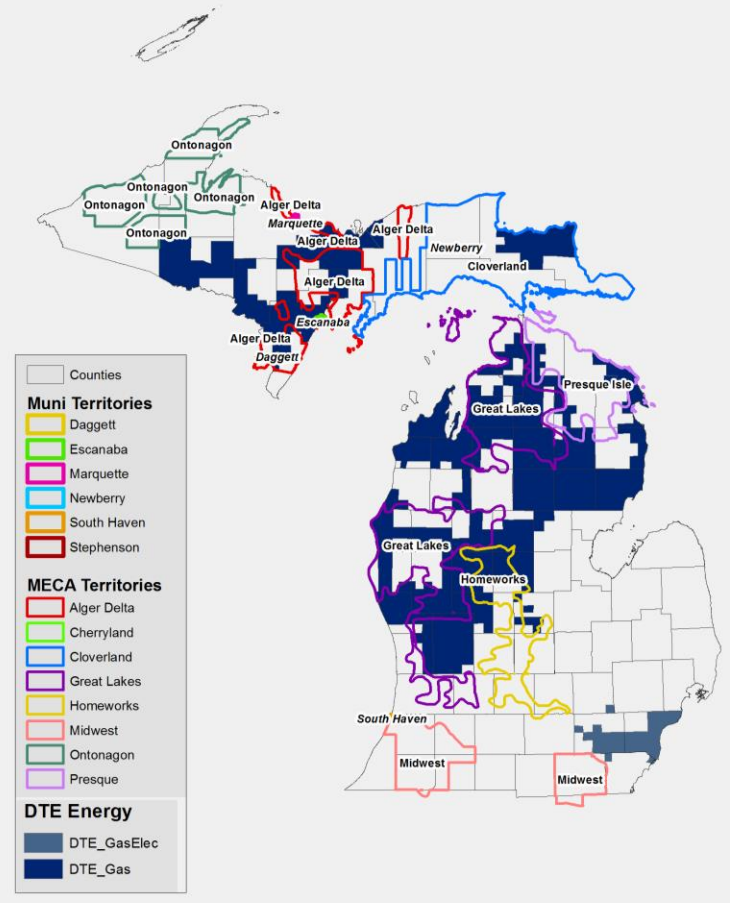
- Utility arrears management
- Reduce demand response
- Energy efficiency

Future Opportunities

MECA Territory and Consumers Energy Territory



MECA Territory and DTE Energy Territory



Questions

Shannon Stendel
Product Manager – Homes
ssstendel@weccusa.org
608.729.6862

